

AMENDMENTS TO THE CLAIMS:

1. (Currently Amended) A semiconductor device, comprising:

a semiconductor chip;

a chip-mounting substrate which is provided with said semiconductor chip mounted on a top surface thereof and first conductive pads formed on a bottom surface thereof and connected with said semiconductor chip electrically;

solder balls formed on said first conductive pads;

a printed circuit board on which second conductive pads connected with said solder balls are formed;

a solder mask formed on a bottom surface of said chip-mounting substrate, said solder mask having an uneven roughness; and

underfill material injected into a clearance formed between said chip-mounting substrate and said printed circuit board,

wherein said uneven roughness is formed on a surface which is brought into contact with said material of ~~at least one of said chip-mounting substrate and said printed circuit board,~~

wherein said uneven roughness exists on [a] said bottom surface of said chip-mounting substrate, and

wherein said uneven roughness on said bottom surface increases an area of a contact surface between said chip-mounting substrate and the underfill material.

2. (Previously Amended) A semiconductor device according to claim 1, wherein said uneven roughness is formed on at least one of said first conductive pads and said second conductive

pads selectively.

3. (Previously amended) A semiconductor device according to claim 1, wherein said uneven roughness is shaped into at least one of a slit-like configuration and a dimple-like configuration.

4. (Currently Amended) A semiconductor device, comprising:

a semiconductor chip;

a lead frame which is provided with said semiconductor chip mounted thereon and electrically connected with said semiconductor chip; and

a printed circuit board including ~~third~~ conductive pads which are formed thereon and brought into direct contact with a bottom surface of said lead frame,

~~wherein at least one of said lead frame and said printed circuit board is provided with uneven rough contact surfaces in direct contact therebetween, and~~

wherein said uneven roughness exists on a said bottom surface of said lead frame and a surface of said conductive pads.

5-15 (Canceled)

16. (Previously Added) The semiconductor device according to claim 1, wherein said printed circuit board has a dimple-like shaped configuration.

17. (Previously Added) The semiconductor device according to claim 1, wherein a surface of

said chip-mounting substrate has a slit-like shaped configuration.

18. (Previously Amended) The semiconductor device according to claim 4, wherein said lead frame comprises a lead, said lead comprises an inner lead portion connected to an outer lead portion, said outer lead portion comprises said uneven roughness.

19. (Previously Amended) The semiconductor device according to claim 4, wherein said uneven roughness exists on contact surfaces between a pad of said printed circuit board and an outer lead of said lead frame.

20. (Currently Amended) A semiconductor device, comprising:

a semiconductor chip;

a chip-mounting substrate which is provided with said semiconductor chip mounted on a top surface thereof and first conductive pads formed on a bottom surface thereof and connected with said semiconductor chip electrically, said chip-mounting substrate including Cu wirings;

solder balls formed on said first conductive pads;

a printed circuit board on which second conductive pads connected with said solder balls are formed; and

material injected into a clearance formed between said chip-mounting substrate and said printed circuit board,

wherein uneven roughness is formed on a contact surface between said Cu wirings of said chip-mounting substrate and said solder balls, and

wherein said uneven roughness exists on a bottom surface of said Cu wirings, and

said Cu wirings are directly connected to said solder balls to form a joined surface.

21. (New) The semiconductor device according to claim 1, wherein said uneven roughness is continuously formed on said solder mask.

22. (New) The semiconductor device according to claim 4, wherein said lead frame comprises a lead, said lead comprises said bottom surface.

23. (New) The semiconductor device according to claim 20, wherein said uneven roughness is continuously formed on said bottom surface of said Cu wiring.
